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INTEROFFICE MEMORANDUM

TO: Kent Dorr, K-H Project Management, Bldg. T130F, X6034

FROM: Doug Steffen, RMRS E/C/D Project Management, Bldg. T130F, X2164

DATE: July 15, 1997

SUBJECT: **BUILDING 123: TRANSMITTAL OF PROPOSED ACTION MEMORANDUM, REVISION 2**

Attached is Revision 2 of the Proposed Action Memorandum for the decommissioning of Building 123. This revision incorporates comments received from the DOE, Colorado Department of Public Health and the Environment (CDPHE), and members of the K-H team. This document should be forwarded to DOE for approval and subsequent transmittal to CDPHE.

Cc:
123 Project File

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PROPOSED ACTION MEMORANDUM FOR THE DECOMMISSIONING OF BUILDING 123

July 17, 1997

Revision 2
Document Control Number RF/RMRS-97-012

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PROPOSED ACTION MEMORANDUM FOR THE DECOMMISSIONING OF BUILDING 123

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ATTACHMENTS

ACRONYMS

ACM	asbestos-containing material
ALARA	as low as reasonably achievable
AQM	Air Quality Management
AHERA	Asbestos Hazard Emergency Response Act
ARAR	Applicable or Relevant and Appropriate Requirements
BRCS	Building Radiation Cleanup Standard
CAQCC	Colorado Air Quality Control Commission
CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Public Health and the Environment
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHWA	Colorado Hazardous Waste Act
COC	contaminants of concern
D&D	Decommissioning and Demolition
DDCP	dibutyl-n-n-diethyl carbamoyl phosphonate
DoD	Department of Defense
DOE	Department of Energy
DPP	Decommissioning Program Plan
ED	External Dosimetry
EDE	effective dose equivalent
FIP	Facility Implementation Plan
GSA	General Services Administration
HPGe	high-purity germanium
HPI	Health Physics Instrumentation
HRR	Historical Release Report
HSP	Health and Safety Plan
HUD	US Department of Housing and Urban Development
HVAC	heating, ventilating and air conditioning
IH	Industrial Hygiene
IHSS	Individual Hazardous Substance Site
IRA	Interim Remedial Action
IWCP	Industrial Work Control Plan
LLM	low-level mixed waste
LLW	low-level waste
MARSSIM	Multi-Agency Radiological Site Survey and Site Investigation Manual
MCL	Maximum Contaminant Level
mrem	millirem
NCP	National Contingency Plan
NEPA	National Environmental Protection Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NRC	Nuclear Regulatory Commission
NTS	Nevada Test Site
OPWL	Original Process Waste Line
OSHA	Occupational Safety and Health Administration

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PAM	Proposed Action Memorandum
PCB	polychlorinated biphenyl
PEP	Project Execution Plan
PPE	personal protective equipment
PU&D	Property Utilization and Disposal
QA/QC	Quality Assurance/Quality Control
RAAMP	Radioactive Ambient Air Monitoring Program
RCA	Radiation Control Area
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RLCR	Reconnaissance-Level Characterization Report
RLCS	Reconnaissance-Level Characterization Survey
RMMA	Radioactive Material Management Area
RMRS	Rocky Mountain Remediation Services
RWP	Radiation Work Permit
SAA	Satellite Accumulation Area
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments Reauthorization Act
SHPO	State Historic Preservation Office
TAL	Target Analyte List
TBC	to-be-considered
TCLP	Toxicity Characteristic Leaching Procedure
TLD	thermoluminescent dosimeter
TSCA	Toxic Substance Control Act
TSD	treatment, storage, and disposal
UBC	Underground Building Contamination
VOC	volatile organic compound
WSRIC	Waste Stream Residue Identification Characterization
WMP	Waste Management Plan

1.0 PURPOSE

This Proposed Action Memorandum (PAM) outlines the approach and the applicable requirements that will be utilized in the decommissioning of Buildings 123, 114, 113, and 123S as part of the site cleanup of the Rocky Flats Environmental Technology Site (RFETS). The effort will be managed as a non-time critical interim remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), with respect to the RFETS Life Cycle Baseline (DOE 1996a).

Removal of the subject buildings will be conducted in accordance with the Rocky Flats Cleanup Agreement (RFCA) (DOE 1996b) and the applicable or relevant and appropriate requirements (ARARs) of Federal, State, and local regulations. The regulatory requirements are implemented through RFETS policies and procedures. The action will be conducted in a manner that is protective of site workers, the public, and the environment.

2.0 PROJECT DESCRIPTION

The project will facilitate the decommissioning efforts at Buildings 123, 113, 114, and 123S; remediation of Individual Hazardous Substance Sites (IHSSs) 121 and 148; partial closure of Resource Conservation and Recovery Act (RCRA) Unit 40; and decontamination of radiologically-contaminated facility systems. The Building 123 slab and foundation will be removed as required to remediate any subsurface contamination as dictated by soil sampling results. The PAM will thoroughly examine building removal activities, including relocation of the building tenants; removal of furniture, equipment, and excess chemicals; characterization of the building hazards and potential contamination; and removal of all asbestos-containing material (ACM).

2.1 Building 123 Physical Description

The main structure in the Building 123 Cluster is Building 123, a bioassay laboratory and a dosimetry counting and distribution facility. Associated structures include Building 113, a medical records storage facility (which originally served as a guard shack); Building 114, a small outdoor shelter; and Building 123S, a metal storage unit for containerized waste. Building locations are indicated in Figure 2-1. This section describes the physical arrangement of principal buildings in the Building 123 Area, including architectural and structural features, significant equipment, environmental control systems and safety aspects of each building.

Building 123 is located on Central Avenue between Third and Fourth Streets (Figure 2-1). Figure 2-2 indicates the location of the building in relation to other RFETS facilities. The original building has been in use since construction in 1953, with additions completed in 1968, 1972, and 1974. The general areas of the building and respective approximate construction dates are:

East and North Wing (Rooms 100-135) - 1952
Addition to East Wing (Rooms 139-151) - 1968
West Wing (Rooms 154-163) - 1972

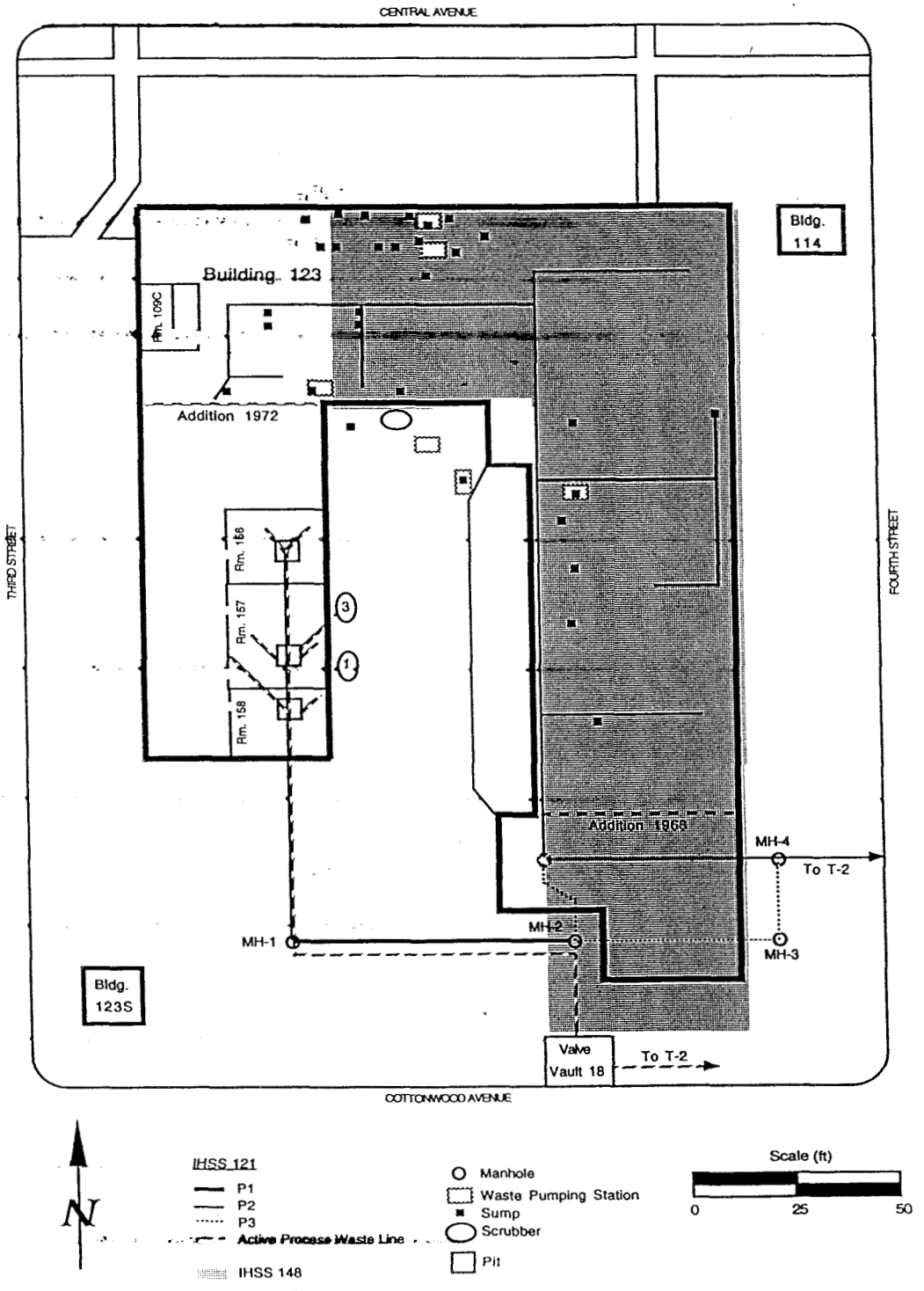

Figure 2-1 Building 123 Site Plan

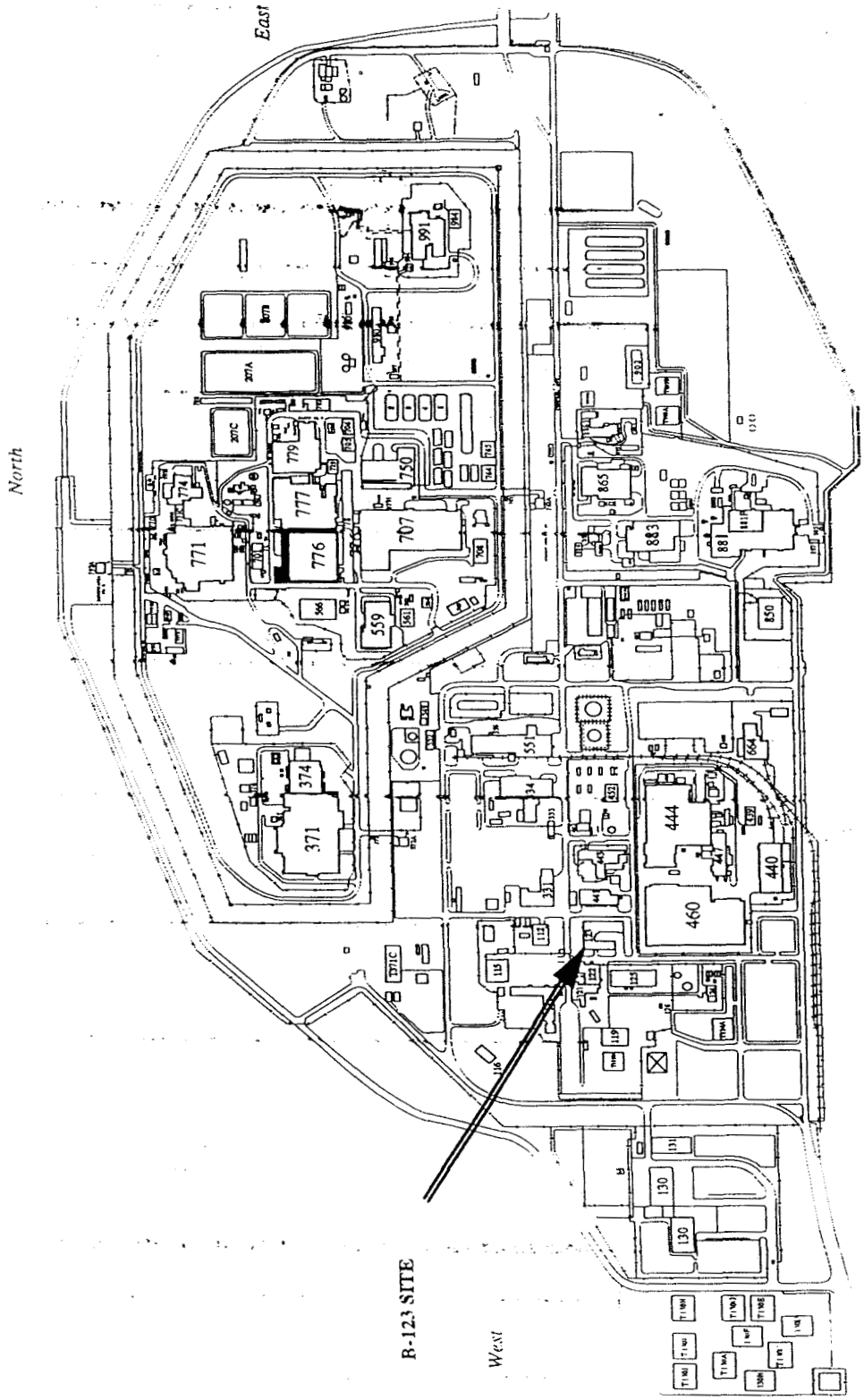

Figure 2-2 Building 123 Site Location

Addition to East Wing (Room 165) - 1974

Currently, the 75-room, single-level facility covers approximately 19,000 square feet and is constructed on grade with approximately fourteen- (14-) foot ceilings. Construction material is mostly concrete with an asphalt roof. Modifications have been made to the building interior after the original construction of each area. Areas have been remodeled including installation and removal and partition walls, laboratory fixtures and other items. Sections of piping have been installed, removed and modified during the life of the facility. In addition, piping insulation in some areas has been replaced. Therefore, the possibility exists for a specific system, room or area to contain both ACM and non-ACM.

Heating, ventilating, and air conditioning (HVAC); electricity; gas and compressed air; steam; water; process waste; sewer; fuel oil; and fire protection utility systems serve the building.

2.2 Building 123 Cluster Operating History

2.2.1 Building 123

Building 123 was one of the first ten (10) buildings constructed at Rocky Flats. Analytical laboratory, dosimetry and instrument calibration activities have been conducted in Building 123 since construction in 1953. Building 123 also provides office space for radiation health specialists; storage for all radiological health records; a laboratory for calibration and repair of criticality alarms and other repair/calibration shops. Building 123 once housed medical research until such operations were relocated to Building 122. The Building 123 Floor Plan is indicated in Figure 2-3.

Operation of the analytical laboratory generates approximately 95 percent of the building waste and stores the majority of hazardous chemicals, with minor contributions from External Dosimetry (ED) and Health Physics Instrumentation (HPI) Sections. Historically, standard utility services have also generated small amounts of waste.

The analytical laboratory analyzes environmental (air, water, soil, and vegetation); biological (urine, fecal material, and nose swipes); health physics (room air); and industrial hygiene samples (beryllium and organic vapors in room air). The HPI Section repairs and calibrates radiation-detection instruments. The ED Section processes thermoluminescent dosimeters (TLDs) and film badges. The Radiological Records Section maintains occupational radiation exposure and dose records for radiation workers.

The analytical laboratory procedures involve the digestion of samples to purify and concentrate the radiological constituents. Sample preparation operations generated the bulk of the building waste. Combustibles, rubber gloves, and broken glass generated in the Radioactive Materials Management Areas (RMMAs) were placed in accumulation areas for eventual handling and removal as low-level waste (LLW). Various sample waste and rinse solutions were washed down the process drain for subsequent treatment in Building 774 (in Building 374 after 1983). Liquid organic wastes were containerized in special bottles and stored in satellite accumulation areas prior to transfer to the RCRA 90-day storage building and eventual shipment to Liquid Waste Operations. RCRA-

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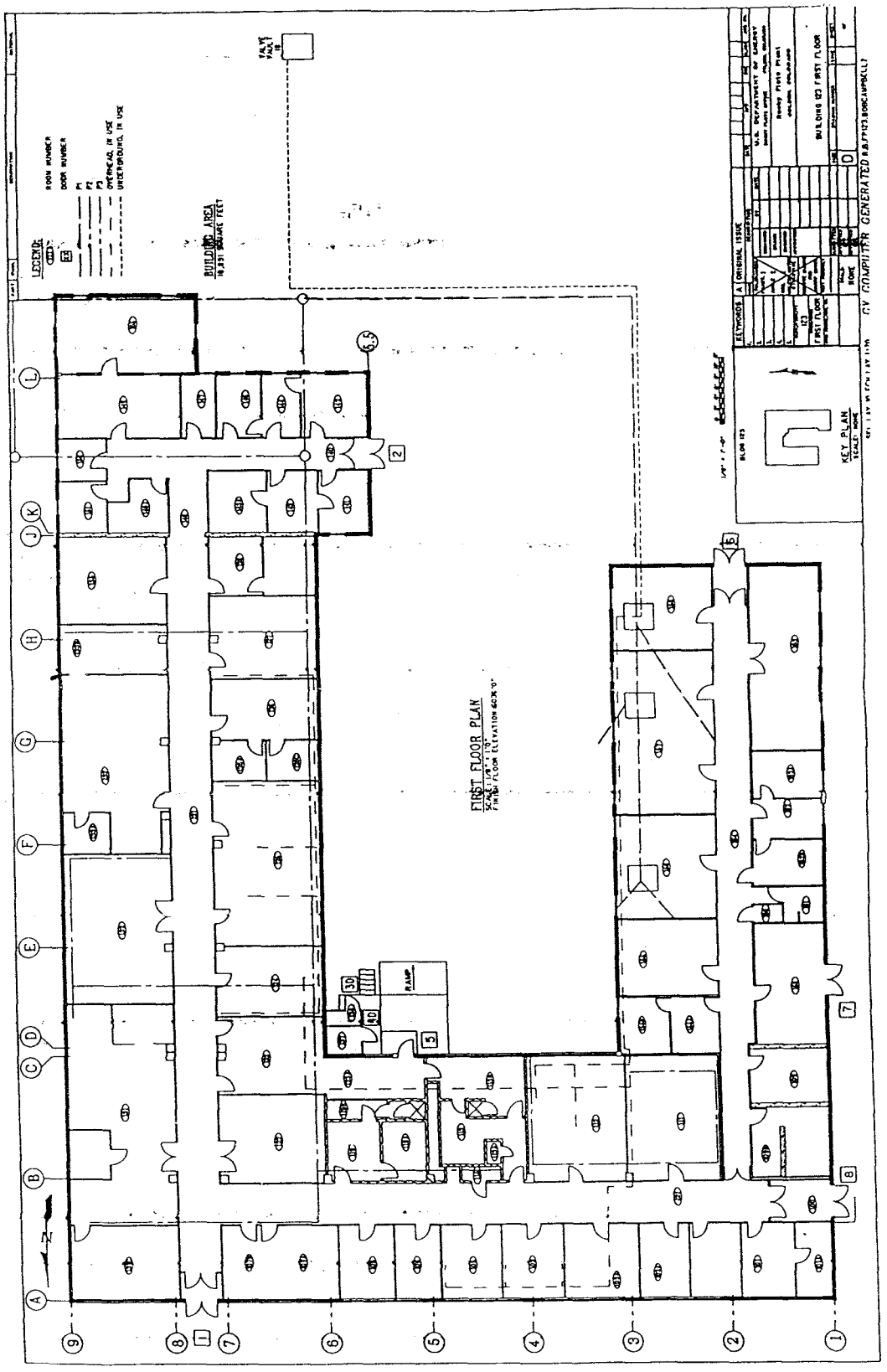

Figure 2-3 Building 123 Floor Plan

regulated wastes were also collected in Satellite Accumulation Areas (SAAs), located in Rooms 103A, 124, 125, 127, and 156. Wastes generated in non-RMMAs and monitorable lab trash were deposited in dumpsters for disposal in the RFETS landfill.

Hazardous chemicals associated with Building 123 operations included nitric acid, hydrochloric acid, hydrofluoric acid, oxalic acid, ammonium hydroxide, formic acid, perchloric acid, toluene, isopropyl alcohol, ammonium thiocyanate, methanol, mercury, lead, cadmium, beryllium, sodium hydroxide, and potassium permanganate.

During the past forty-four (44) years, building operations have resulted in varying degrees of radioactive and chemical contamination within the building. For example, interviews with Building 123 occupants indicate that in the late 1960's or early 1970's, a small amount of cesium-contaminated liquid was spilled on the concrete floor in Room 109C. The floor was sealed to immobilize the contamination. Leaks or spills have also potentially contaminated the soil adjacent to and beneath the building (Section 2.3.1 through 2.3.3)

2.2.2 Building 113

Building 113 is a guardhouse that has been converted to office space (Figure 2-1). The building is constructed of concrete with a flat roof, and is similar to four other guardhouses that have already been removed from RFETS. No internal processes were located in the building.

2.2.3 Building 114

Building 114 is a small shelter used by RFETS employees as a waiting area for offsite transportation (Figure 2-1). The building encloses about 25 square feet and is constructed of masonry blocks with a flat roof. No utilities are associated with the building, and records indicate that the building has served no other function.

2.2.4 Building 123S

Building 123S is a metal shed upon a concrete slab (Figure 2-1). The shed encloses approximately 60 square feet and was formerly managed as a RCRA 90-day storage area for organic wastes including toluene and dibutyl-n-n-diethyl carbamoyl phosphonate (DDCP) wastes produced in Building 123 laboratories. The facility was formally closed as part of the RCRA process in 1996. Closure followed 40 CFR 262.34(a) and 40 CFR 265.111 and 265.114 requirements. No waste or other material is currently stored in the shed. No utility hookups exist in the building.

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2.3 RCRA-Designated Areas and Individual Hazardous Substance Sites (IHSSs)

2.3.1 RCRA Unit 40

The Building 123 area encompasses a portion of RCRA Unit 40, the plant-wide process waste system, a network of tanks and underground and overhead pipelines constructed to transport and temporarily store process wastes from point of origin to on-site treatment and discharge points. RCRA Unit 40 includes all overhead and underground and process waste lines in and around Building 123. Closure of RCRA Unit 40 will be conducted in accordance with Colorado Hazardous Waste Regulations (265, Subpart G) which requires a 30-day public comment period. No other RCRA unit exists in the Building 123 area.

2.3.2 IHSS 121

The Building 123 area includes CERCLA-designated IHSS 121. IHSS 121 consists of RCRA Unit 40 underground OPWLs P-1, P-2, and P-3, which were designated in the *Final Phase I RCRA Facility Investigation/ Remedial Investigation (RFI/RI) Work Plan for Operable Unit 9* (DOE ~~1992a~~). ~~The OPWL system constitutes Operable Unit No. 9 (OU9), a network of tank and~~ underground pipelines constructed to transport and temporarily store process wastes from point of origin to on-site treatment and discharge points.

All process waste generated from 1952 to 1968 was transferred from Building 123 to Building 441 through line P-2, which ran below the west side of the east wing before exiting at the southeast corner of the building. In 1968 the southeast wing was extended about fifty (50) feet to the south. Prior to the building addition, two manholes (MH-2 and MH-3) were constructed and the line was extended south to MH-2, then east to MH-3, and north to MH-4, before assuming the original path at P-2. ~~The extension was designated as P-3. One manhole~~ was abandoned and covered by the building addition. In 1972 a west wing was constructed, extending south from the northwest corner of the original building. Prior to construction of the wing, line P-1 was installed to transfer waste to manhole MH-1, then east to a junction with P-3 at MH-2 (Figure 2.1). The lines transferred the following process waste from Building 123:

- Acids: nitric acid (HNO_3), hydrofluoric acid (HF), sulfuric acid (H_2SO_4), hydrochloric acid (HCl), acetic acid ($C_2H_4O_2$), and perchloric acid ($HClO_4$);
- Bases: ammonium hydroxide (NH4OH) and sodium hydroxide (NaOH);
- Solvents: acetone, alcohols, cyclohexane, toluene, xylenes, triisooctomine, and ether;
- Radionuclides: various isotopes of plutonium (Pu), americium (Am), uranium (U), and curium (Cm);
- Metals: beryllium (Be) (trace amounts); and
- Others: ammonium thiocyanate, ethylene glycol, and possible trace amounts of polychlorinated biphenyls (PCBs).

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In 1982 P-2 and P-3 were abandoned and plugged with cement. In 1989 the process waste transfer system was upgraded, including removal of the east-west section of P-1 between MH-2 and MH-3. The north-south section of P-1 between Building 123 and MH-1 was converted to the new process system. Three large, interconnected concrete sump pit areas were installed in Rooms 156, 157, and 158 to accommodate process waste system backup. Pipe was installed connecting MH-1 to Valve Vault 18 (Figure 2-1).

Currently, all process waste throughout Building 123 is collected in floor sumps. Each sump collects and temporarily stores liquid waste which is then pumped through overhead lines into a main floor sump in Room 158. The waste is then gravity-fed through P-1 to Valve Vault 18, then to Tank 428 at Building 441, and finally to Building 374 for treatment.

2.3.3 IHSS 148

IHSS 148 is part of Operable Unit No. 13 (OU13) and is located beneath Building 123. IHSS 148 was designated in the *Final Phase I RFI/RI Work Plan for Operable Unit 13* (DOE 1992b) and has been identified as Underground Building Contamination (UBC) 123 in the RFETS Historical Release Report (HRR, DOE 1992c). IHSS 148 was established as a result of reported small spills of nitrate-bearing wastes along the east side of the building. Potential leaks in OPWL P-2 may have created contaminated soil beneath the building. A detailed characterization was conducted from September 1993 to February 1995 as part of a Phase I RCRA Facility Investigation/Remedial Investigation (RFI/RI). The characterization included high-purity germanium (HPGe) surveys, vertical soil profiles, surface soil sampling and soil gas surveys.

Thirty-four (34) analytes were detected in the surface soil survey, including twenty-six (26) inorganic compounds and eight radionuclides.

The soil-gas survey was conducted on a 25-foot grid in accordance with the work plan. Sixty-four (64) soil-gas locations were sampled during the survey. Thirteen (13) samples contained volatile organic compound (VOC) levels in excess of the 1 µg/ L method detection limit. Benzene, toluene, ethylbenzene, and xylene (BTEX) fuel constituents were detected in samples collected from the perimeter of Building 123 and within the west and east wings of the building. Trichlorofluoromethane (TCFM) was detected in nine samples distributed throughout the IHSS 148 area at levels up to 2.6 µg/ L. Tetrachloroethene (PCE) was detected at 1.5 µg/ L in a sample collected to the east of Building 123. The presence of organic extraction constituents is consistent with unconfirmed reports that such liquids used in radionuclide analyses were occasionally disposed onto the soil surface outside of Building 123 and allowed to evaporate. Analyses results indicate that subsurface infiltration precluded full evaporation.

The HRR also indicated a potential for soil contamination from sources other than Building 123 and associated OPWLs.

2.4 Building Hazard Summary

Pursuant to RFCA criteria, a Reconnaissance-Level Characterization Survey (RCLS) was

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conducted to identify any hazardous and radioactive contaminants in the Building 123 Cluster. The survey identified no significant hazards associated with Buildings 113, 114 nor 123S, and indicated that the majority of Building 123 is considered to be "unaffected" (low potential for hazardous or radiological contamination) based on operational and process history. However, the following rooms in Building 123 were previously, or currently, posted as Radiation Control Areas (RCAs) or Radioactive Material Management Areas (RMMAs) and are therefore considered to be "affected" (potential for low-level contamination) and will require a more detailed survey prior to decommissioning: Rooms 103A, 105, 112, 123, 124, 125, 126, 127, 135, 149, 155A, 156, 157, 158, and 163.

In addition to radiological surveys, sampling and analysis efforts were conducted to determine the presence of beryllium, asbestos, lead, PCBs, and other potential contaminants. Hazardous chemicals associated with Building 123 operations included nitric acid, hydrochloric acid, hydrofluoric acid, oxalic acid, ammonium hydroxide, formic acid, perchloric acid, toluene, isopropyl alcohol, ammonium thiocyanate, methanol, mercury, lead, cadmium, beryllium, sodium hydroxide, and potassium permanganate. Chemicals and waste materials are scheduled to be removed from the building prior to commencement of decommissioning activities. Potential hazards in the building are summarized in Table 2-4. These hazards were identified by a review of facility records and a visual survey of the building by project personnel, whom were assisted by building personnel familiar with the operational history of the facility.

The following potential hazards identified during the RLCS will be addressed during tenant relocation:

- The liquid nitrogen system will be deactivated and associated pressurized cylinders will be removed from the building.
- Laboratory chemicals will be removed from the building.

The following potential hazards identified during the RLCS will be addressed after tenant relocation, but prior to building demolition:

- All ACM will be removed by a separate licensed contractor.
- Fluorescent light ballasts will be evaluated for PCBs. Ballasts containing regulated levels of PCBs will be removed by the decommissioning contractor and packaged and shipped to a Toxic Substances Control Act- (TCSA-) regulated disposal facility by RFETS Waste Management.
- Utilities and facility safety systems will be disconnected by Plant Power and Maintenance.
- Material remaining in the building will be removed and properly managed.

2.4.1 Asbestos

Asbestos-containing materials (ACM) were inspected by a State-certified inspector the week of April 7, 1997. The inspection and evaluation was conducted in accordance with the guidelines specified in the Asbestos Hazard Emergency Response Act (AHERA) and in compliance with the US Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and State of Colorado asbestos inspection regulations. Abatement will be conducted by a

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Table 2-4 Contaminants of Concern (COCs)

COC	Location	Implementation
Asbestos Containing Material (ACM)	Detected in floor and ceiling tiles; wall board; and as pipe insulation in most rooms.	To be remediated by a State-certified Asbestos Abatement Contractor. See Section 2.4.1
Beryllium	Present in Rooms 111&112	See Section 2.4.2.
Chemicals	Chemicals utilized in laboratory work have been identified.	All chemicals will be accumulated and removed from the building by the chemical handling group prior to commencement of decommissioning activities. See Section 2.4.3.
RCRA hazardous waste in Satellite Accumulation Areas (SAAs)	Present in Rooms 103A, 124, 125, 127, and 156.	Each waste stream will be managed according to associated waste components. See Section 2.4.4.
Perchloric acid fume hoods	Present in Rooms 157, 127, 112, and 105.	See Section 2.4.5.
Pressurized gas cylinders and liquid nitrogen	Present in laboratory areas.	See Section 2.4.6.
Polychlorinated biphenyls (PCBs)	Present in fluorescent light ballasts.	See Section 2.4.7.
Radiologically Contaminated Materials	Present in overhead piping, floor tiles in historical spill areas, on fume hoods, and laboratory counter tops.	See Section 2.4.8.
Metals (arsenic, cadmium, lead, lead-based paint, and silver)	Includes lead bricks and shielding; lead-based paint; lead and silver solder; nickel cadmium (NiCd) and lead acid batteries; and silver in photographic negatives.	See Section 2.4.9.

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contracted State-qualified abatement company.

A permit is required for asbestos abatement operations in accordance with Regulation 8, Control of Hazardous Air Pollutants, Part B, Section 3, (1)(a)(i); Notification will be made to the State of Colorado in accordance with Regulation 8, Part B, Section 3, (1)(a)(iii). A separate form for demolition is required for demolition in accordance with Regulation 8, Part B, Section 3, (3)(b)(i, ii, iii).

The following ~~ACM sources and approximate~~ volumes will be abated prior to commencement of decommissioning activities: thermal system insulation (900 linear feet); cementitious wallboard (3,450 square feet), drywall with tape and compound (4,000 square feet), resilient flooring (10,600 square feet), gray paper duct insulation (100 square feet), and mastic adhesive (40 square feet).

2.4.2 Beryllium

Thirty-nine (39) metal samples were collected by qualified beryllium sampling technicians from Rooms 111 and 112, laboratories that processed beryllium-contaminated samples as a function of site environmental soil sampling programs. The samples were submitted to an external analytical laboratory for analysis. Three (3) swipe samples taken in Rooms 123A, 111, and 112 indicated trace readings between 0.37 $\mu g/ft^2$ and 2.04 $\mu g/ft^2$ (RMRS 1997). All results were below the RFETS site housekeeping level of 25 $\mu g/ft^2$, a standard developed by the Atomic Energy Commission in approximately 1949 and adopted and used by RFETS since the 1960's.

Initial decommissioning efforts in these rooms will include decontamination of all equipment surfaces.

2.4.3 Chemicals

Analytical chemicals currently associated with Building 123 operations are tracked by the RFETS Chemical Tracking Group under the "Right-to-Know" provisions of the Superfunds Amendments Reauthorization Act (SARA) and are being managed by the laboratories. The chemicals will be removed immediately following termination of laboratory operations. Chemicals remaining in the building will be managed by the RFETS Chemical Tracking Group which will utilize or package chemicals for disposal. The current inventory of the building includes nitric acid, hydrochloric acid, hydrofluoric acid, oxalic acid, ammonium hydroxide, formic acid, perchloric acid, toluene, isopropyl alcohol, ammonium thiocyanate, DDCP, methanol, mercury, lead, cadmium, beryllium, sodium hydroxide, and potassium permanganate.

2.4.4 RCRA Hazardous Waste in Satellite Accumulation Areas (SAAs)

Satellite Accumulation Areas (SAAs) were established in Rooms 103A, 124, 125, 127, and 156 to ensure proper storage of RCRA hazardous wastes near the point of generation. The building

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custodian characterizes and segregates all SAA wastes according to sampling and analysis results and process knowledge. These waste streams are further tracked by the RFETS SAA tracking system, which is audited internally. The wastes must be properly prepared for storage or disposal prior to closing of all Building 123 SAAs.
Representative waste types for each area are summarized as follows:

- Room 103A - Combustibles, waste isopropynol, DDCP/toluene
- Room 124 - Liquid waste methanol, isopropynol
- Room 125 - DDCP/~~toluene, isopropynol~~ contaminated with toluene
- Room 127 - Hydrochloric acid, hydrofluoric acid, ethanol
- Room 156 - Combustibles, waste toluene/DDCP, isopropynol persuade

2.4.5 Perchloric Acid

Perchloric acid hoods currently occupy four rooms [105, 112, 127 and 157(2 hoods)] within Building 123. Chronic use of perchloric acid may have caused the chemical to crystallize inside the hoods. The crystalline form may be sensitive to shock and could represent a potential physical hazard during decommissioning activities. To mitigate such a hazard, all hoods and duct work will be ~~flushed and the rinsate directed to the Site sanitary wastewater treatment plant.~~ Site ~~Health~~ and Safety have reviewed requirements for decontamination of perchloric acid hoods. The steps that outlined in the requirements include interviews with laboratory personnel; walkdowns, necessary repairs, and washdowns of all hoods and associated ductwork; and dismantlement of ductwork into easily managed sections. The requirements also define proper segregation and disposal of all solid duct material.

2.4.6 Pressurized Gas Cylinders and Liquid Nitrogen

Pressurized gas cylinders are used by the laboratories and will be removed by laboratory personnel during tenant relocation. The liquid nitrogen system will be disconnected and removed in conjuction with utility deactivation.

2.4.7 Polychlorinated Biphenyls (PCBs)

Potential exists for the presence of PCBs in fluorescent light ballasts. Consequently, all light ballasts will be evaluated for PCB contamination and properly segregated after the building has been vacated and lights are no longer required. All light ballasts marked "PCB Free" or "No PCBs" will be managed as non-hazardous solid waste and disposed at a sanitary landfill. Ballasts marked "PCBs" or not marked and not leaking will be packaged for disposal at an TSCA-permitted facility. Leaking PCB light ballasts and unmarked light ballasts will be managed as fully-regulated PCB Articles.

No ~~other potential PCB-contaminated systems have been identified~~ in Building 123.

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2.4.8 Radiologically-Contaminated Materials

Radiological assessments have been conducted in Building 123 by RFETS Radiological Safety. Most of the following Radiological Material Management Areas (RMMAs) exist in laboratory hoods: Rooms/Labs 103A, 105, 112, 124, 125, 156, 157, and 163. Radiological Contamination Areas (RCAs) exist in Room/Labs 103A, 105, 112, 123, 124, 125, 126, 127, 135, 149, 155A, 156, 157, 158, 163. Radiological sources are stored in 123, 126, and 155A. All RMMAs and RCAs are managed according to associated radiological characteristics.

Floor tiles removed from areas that exhibit noticeable signs of spill contamination or are suspect of contamination as a result of a known spill incident, will be treated as LLW. In the event that contaminated tiles cannot be scabbled from the foundation, an entire section of the floor indicating evidence of spill contamination will be removed and treated as LLW.

2.4.9 Metals

Samples were collected from selected painted surfaces in Building 123 and were analyzed for metals (specifically lead, chromium, cadmium, and arsenic) to support industrial hygiene efforts. Site historical knowledge and recommendations by an accredited inspector were utilized in the sampling process. Twenty-one (21) samples were collected, and analysis was conducted using Atomic Absorption Spectroscopy by a third independent party. All paints indicated detectable levels of one or more of the metals. All results will be reviewed in accordance with Toxicity Characteristic Leaching Procedure (TCLP) criteria prior to disposal. Painted surfaces of construction materials will be managed as standard construction debris and are not expected to exceed TCLP debris levels.

Lead bricks and shielding are located throughout the radiological areas to mitigate background radiation and protect personnel. The largest volume of lead is used to shield detectors and radio~~logical sources~~. ~~All lead or lead-bearing material will be~~ removed ~~by~~ the source ~~owners~~ or dispositioned through the RFETS Property Utilization and Disposition Department.

3.0 PROJECT APPROACH AND OBJECTIVES

Building 123 will be decommissioned using the approach outlined in the following sections. The primary decommissioning objectives will be accomplished according to an integrated scope, schedule, and cost control system. All compliance documentation and project plans will be prepared and approved by RFETS Decommissioning and Demolition Management under a Project Execution Plan to ensure that decommissioning efforts are conducted in a safe and compliant manner. All building utilities and associated facility safety systems will be disconnected prior to commencement of building demolition. The building will be safely dismantled, and the resulting debris and waste will be properly characterized and disposed at appropriate off-site facilities. In addition, soil sampling beneath and adjacent to the building will be conducted using the methods described in a Sampling and Analysis Plan (SAP) prepared for this project. The SAP will be submitted ~~to CDPHE at least 30 days prior to implementation~~. Underground pipelines will be managed with respect to soil sample analyses results. Soil remediation, if necessary, will be

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conducted with respect to RFCA Action Levels in a manner that is protective of human health and the environment.

This project will use standard industry decommissioning practices, but will also incorporate lessons learned from previous demolition projects at RFETS and utilize personnel with expertise in decontamination and decommissioning activities.

3.1 Scope

Activities supporting the decommissioning effort have been divided into three general areas: (1) planning and engineering; (2) characterization; and (3) remediation. The scope includes removal of all internal piping, ventilation, and process waste systems. All rubble and materials removed during decommissioning activities are to be recycled or disposed in an appropriate off-site facility.

3.1.1 Planning and Engineering

Regulatory activities are completed as part of this action to ensure that the action is conducted in a manner consistent with the RFCA and regulations of the State of Colorado. Activities include assurance of public involvement and practical mitigation of environmental impacts. Planning objectives have been accomplished through project scoping meetings with CDPHE and EPA, and approval of the PAM document by the appropriate regulatory bodies and the general public. Other regulatory activities include General Services Administration (GSA) and Housing and Urban Development (HUD) notifications, establishment of the CERCLA administrative record, compliance with the Historic Preservation Act [including site programmatic consultation with the Colorado State Historic Preservation Office (SHPO) and the US National Park Service], and notification of asbestos abatement.

Specific planning documents include, a Reconnaissance-Level Characterization Report (RCLR), a Health and Safety Plan (HSP), a Waste Management Plan (WMP), an IHSS Sampling and Analysis Plan (SAP), a Project Execution Plan (PEP), and Integrated Work Control Plans (IWCPs), and documentation detailing the programmatic consultation with the SHPO. The documents will be provided to prospective decommissioning contractors as part of the project procurement package and will also be available to the general public upon request. A site visit will be conducted to facilitate preparation for demolition activities. A design package will be prepared for decommissioning activities which will define locations and configurations of active and inactive utility systems, summarize sample and analysis data, indicate as-built drawings, and present engineering estimates for building decommissioning.

3.1.2 Characterization

3.1.2.1 Building Characterization

Characterization activities associated with the decommissioning effort includes survey of interior building surfaces. A final radiological characterization and survey for Building 123 will be

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performed in accordance with the decommissioning guideline in Interagency Multi-Agency Radiological Site Survey and Site Investigation Manual (MARSSIM) a draft decommissioning document developed by the Nuclear Regulatory Commission (NRC), Department of Defense (DoD), and the DOE in conjunction with Draft NRC NUREG/CR-5849, *Manual For Conducting Radiological Surveys In Support of License Termination.* The purpose of a final survey will be to verify that demolition rubble can be released to a commercial sanitary or demolition landfill. The survey will be completed following asbestos removal.

The methodology used to classify radiological areas of the building is described below:

Class 1 impacted areas exhibit or have demonstrated potential for radioactive contamination based on site operating history. Such areas may also indicate radioactive contamination that exceeds the applicable limits, based on previous radiological surveys. Typical Class 1 impacted areas have been remediated as a response to leaks and spills and include former disposal or burial sites, waste storage sites and areas with contaminants in discrete solid pieces of material that exhibit high specific activity.

Class 2 impacted areas exhibit or have demonstrated potential for radioactive contamination based on site operating history, but are not expected to exceed the applicable limits. Typical Class 2 areas include locations of unsealed radioactive material, potentially contaminated transport routes, upper walls ~~and ceilings of buildings or rooms subjected to airborne~~ contamination, ~~areas downwind~~ from stack release points, areas where low concentrations of radioactive material were handled, and perimeters of former contamination control areas.

Class 3 impacted areas are not expected to contain any residual radioactivity, or are expected to exhibit levels of residual radioactivity at a small fraction of the applicable limits, based on site operating history and previous radiation surveys. Examples of Class 3 areas include buffer areas around Class 1 and Class 2 areas and areas of very low potential for residual contamination.

Non-~~Impacted areas have no potential for residual radiological contamination~~.

Characterization/scoping surveys will be used to determine the classification of each area in Building 123. Impacted areas will require the performance of extensive radiological surveys based on requirements for Class 1, Class 2 or Class 3. Areas initially classified as Class 1, Class 2 or Class 3 impacted, based on potential radiological contamination from historical reviews versus actual contamination, shown on previous surveys may be reevaluated if initial characterization indicates that no radiological contamination exists above the applicable limits. A comprehensive, but less extensive survey will be performed on all other building surfaces that are considered to be Class 2 or Class 3 impacted.

Class 1 impacted areas will be divided into one-square-meter grids, and a minimum of one fixed and one removable contamination measurement for beta/gamma and alpha will be obtained for each grid location. In addition, a 100% scan for beta/gamma and alpha will be performed on all accessible surface areas. Class 2 impacted areas will be divided into one- square-meter grids, and a minimum of one fixed and one removable contamination measurement for beta/gamma and alpha will ~~be obtained for each grid location. A 10% scan for beta/gamma and alpha~~ will be performed on all accessible surface areas. Class 3 impacted areas will be surveyed at a minimum frequency of

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one fixed and one removable contamination measurement for beta/gamma and alpha for each nine square meters of accessible surface areas. In addition, 10% of all accessible surface areas will be scanned for beta/gamma and alpha contamination. Areas considered to be non-radioactive will be classified as Class 3 impacted areas. Non-impacted areas will not require a radiological survey.

In accordance with the Attachment 9.0 of RFCA, all building surfaces, equipment and demolition materials will be decontaminated. Radioactivity levels will be reduced to meet effective dose equivalent (EDE) criteria. Following decontamination activities, the RFETS Building Radiation Cleanup Standard (BRCS) will be utilized to determine if residual radioactive constituents contained in remaining equipment and demolition debris is compliant with RFCA guidelines and appropriate as-low-as-reasonably-achievable (ALARA) considerations. The BRCS is currently under development in coordination with the EPA, CDPHE, and DOE.

Criteria defined in DOE Order 5400.5, the RFETS Radiological Control Manual, and associated RFETS radiation protection procedures will be used to determine potential of building surfaces, equipment and demolition debris for unconditional release.

3.1.2.2 *Soil Characterization*

Soil characterization will include sampling and analysis of soil beneath and surrounding Building 123. Following removal of the building superstructure, samples will be collected through the slab to determine need for soil remediation. A SAP will be written to guide characterization activities in these areas. The SAP will be finalized prior to the award of the decommissioning contract. The SAP will incorporate a review of existing records to establish the location of potentially contaminated areas and to define sampling protocol. Sample location, depth and frequency will include recommendations from the RFETS Statistical Applications Group. Current planning indicates a need for approximately fifty (50) soil samples from beneath the slab of Building 123 and from areas surrounding underground OPWLs. Samples will be collected at depths immediately below the pipe to locate any contamination that may have leaked from the lines. Samples will be analyzed for Volatile Organic Compounds (VOCs), Target Analyte List (TAL) Metals, radionuclides, and nitrates. Data quality requirements supporting the analysis effort will conform to criteria established in *Guidance for the Data Quality Objective Process,* EPA QA/G-4 (EPA 1994).

3.1.2.3 OPWL Characterization

A plan for partial closure of RCRA Unit 40 will be written to characterize and manage all active OPWLs associated with Building 123, as all abandoned lines were properly decommissioned prior to implementation of RCRA regulations. Characterization will include flushing the active lines with rinse water to remove residues, then sampling the final rinsate for constituents listed in Section 3.1.2.2. Abandoned OPWLs will be managed with according to analyses results from soil samples collected adjacent to and beneath the lines.

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3.1.3 Remediation

3.1.3.1 Building Removal

As part of the decommissioning process, all utilities and electrified systems will be disconnected and capped. The scope of the building decommissioning effort also includes removal of all interior piping, ventilation and above-slab waste systems. The building superstructure will be removed using mechanical shears and front-end-type loaders. A crane will be utilized for removing large equipment and debris, and roof-based systems. Use of heavy equipment will minimize worker exposure to demolition hazards. Fugitive airborne emissions will be minimized with water sprays. The building will be surveyed for radiological contamination prior to decommissioning and building rubble will be segregated and disposed at properly licensed facilities, depending on the type of waste stream created during decommissioning activities. Friable asbestos will be disposed at Kettelman, California; non-friable asbestos and sanitary waste will be disposed at USA Waste, Erie, Colorado; low-level radioactive waste (LLW) will be disposed at Nevada Test Site (NTS); Radioactive ACM will be disposed at Hanford Site, Washington; and low-level mixed waste (LLM) will be stored temporarily on site until an appropriate off-site facility has been identified.

3.1.3.2 Soil Remediation

Remedial actions will be contingent upon compliance of sample analysis results with Tier II "action level" criteria defined in Appendix 6 of the RFCA. The extent of subsurface contamination will dictate the method of remediation. Areas in which soil sample results meet Tier II criteria will require no further action. Areas that exhibit radioactive or chemical contamination at levels in excess of RCRA regulatory levels will be excavated using conventional techniques and removed and disposed offsite as RCRA hazardous waste. Soil will be moved to a temporary staging area immediately adjacent to the site and placed in rolloff containers until proper disposition is determined. The contaminated soil will ultimately be disposed offsite as RCRA hazardous waste. At the completion of excavation activities, verification samples will be collected along the base and sides of the excavation(s) to determine post action condition of the subsurface soils. Samples will be analyzed according to the SAP. If analytical results indicate that contamination is present above Tier II Action Levels, further excavation and sampling will continue until the Tier II criteria are met.

3.1.3.3 OPWL Remediation

Proper closure of active lines will be contingent upon rinsate and soil sampling analyses results. In the event that no contamination above Tier II action levels is detected, active lines will be foamed and capped in place. Closure of abandoned lines will be managed with respect to soil sampling analyses results. Any indication of soil contamination as a consequence of leaking underground lines will eventuate removal and proper disposal of the lines. Remedial and disposal options for partial closure of RCRA Unit 40 will be further defined in a separate closure plan.

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3.2 Worker Health and Safety

The project will comply with OSHA construction standards for Hazardous Waste Operations and Emergency Response, 29 CFR 1926. An HSP is being developed in accordance with this standard. The plan will address potential hazards of each phase of the decommissioning process and specify the requirements and procedures for personnel protection. DOE Order 5480.9A, *Construction Project Safety and Health Management*, will provide additional guidance for this project. The DOE order requires the preparation of Activity Hazard Analysis to identify each task and associated hazards, and the controls necessary to mitigate the hazards. The requirements will be integrated as appropriate. In the event of an unforeseen deviation from the planned approach, a second Activity Hazard Analysis will be prepared to address altered circumstances, and work will proceed according to the appropriate control measures. Data and controls will be continually evaluated. Radiological Work Permits will be generated for contaminated areas and will identify the location of potential surface contamination, define the appropriate PPE, and apply appropriate airborne radioactivity controls, if necessary. As required by 10 CFR 835, *Occupational Radiation Protection*, all applicable implementing procedures will be followed to insure protection of the workers.

3.2.1 Personal Protective Equipment (PPE)

Decommissioning activities may potentially expose workers to physical and chemical hazards and low levels of radiological activity. Physical hazards associated with decommissioning activities include: the use of heavy equipment, electrical shock, noise, heat stress, and work on elevated surfaces. Physical hazards will be mitigated by appropriate use of personal protective equipment (PPE); and application of pre-engineering evaluations, pre-evolutionary meetings, proper training, and administrative controls. Decommissioning activities which require dismantlement of radiologically contaminated systems will be conducted using Level C PPE. This level includes a full-face respirator, steel toe safety shoes, hard hat, anti-C Tyvek coveralls, gloves, disposable shoe covers, and hearing protection (if applicable). Decommissioning of uncontaminated systems or structures will be conducted using Level D PPE, which includes safety glasses or face shield, with neither a respirator nor Tyvek coveralls as described above.
Employee exposure evaluations conducted by an Industrial Hygiene (IH) Site Health and Safety Officer will determine PPE levels, which may change with conditions.

3.2.2 Ambient Air Monitoring

The existing Radioactive Ambient Air Monitoring Program (RAAMP) continuously monitors airborne dispersion of radioactive materials from the Site into the surrounding environment. Thirty-one (31) samplers comprise the RAAMP network. Twelve (12) of these samplers are deployed at the Site perimeter and area used for confirmatory measurements of off-site impacts. The remainder are used as backup measures for determining local impacts from clean-up projects. Building 123 was not a plutonium, uranium or beryllium operations building, and based on results of radiological and beryllium surveys, the decontamination and demolition of Building 123 will not warrant special environmental monitoring.

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Air Quality Management (AQM) will reevaluate the configuration of the air monitoring network if project management surveillance of operations indicates a potential for significant increases in radionuclide emissions. Action levels associated with surveillance activities are defined the Facility Implementation Plan (FIP). AQM will be appropriately notified when the levels are exceeded.

Dust suppression techniques will be used to minimize resuspension or fugitive dust emissions. In addition, earth-moving operations will not be conducted during periods of sustained high winds. If necessary, AQM will identify monitors within the existing ambient network located in the immediate area of Building 123, and the frequency of filter collection and filter analysis at those locations will be adjusted to provide timely information on the project emissions.

3.3 Quality Assurance

A commitment to program quality and continuous improvement is applied at all levels from project start ~~through completion~~. ~~Adherence~~ to the commitment is instrumental in the success of the project. All project personnel are responsible for following approved QA program requirements and participating in quality improvement activities.

Quality Assurance/ Quality Control personnel are involved at the initial planning stages of the project, ~~during site preparation, and during project execution~~. The Quality Assurance ~~organization~~ assumes a proactive role during the project by identifying and/or preventing potential problems or *shortcomings; offering solutions;* and assisting in corrective action steps. QA personnel administer and perform duties in accordance with approved QA program requirements. The scope of the QA/QC program ensures:

- consistency and effective implementation of management/DOE directions and policies with other project/DOE requirements through audits and surveillances;
- assurance of document review and approval requirements through review of applicable ~~procurement and work~~ documents;
- validity of data gathering methodologies;
- compliance with standard operating procedures;
- integrity of waste packaging and incoming materials through inspections;
- facility characterization through performance of facility walkdowns;
- initiation of monitoring projects for potential improvements; and
- emplacement of corrective action initiatives.

3.4 Waste Management

A Waste Management Plan will be developed for the project to define waste management activities. Estimates of waste volume indicate that decontamination, dismantlement, and decommissioning of Building 123 and the remediation of surrounding areas will generate less than 300 cubic yards (cu yd^3) of rubble and contaminated soil. The waste will be designated as LLW, LLM, hazardous, or industrial waste and will be managed in accordance with State and Federal regulations by ~~properly trained personnel. Waste Operations will arrange~~ for transportation to an appropriate off-site facility. Manifests will be the responsibility of RFETS Traffic Department.

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Waste management training requirements are outlined in *Part IX Personnel Training of the Rocky Flats Environmental Technology Site RCRA Permit* (DOE 1997). The training matrix defined in Part IX details the training requirements for all personnel managing hazardous waste. Although the document is part of a permit, all RCRA training requirements of 40 CFR 265.16 are met.

3.4.1 Non-regulated Waste

Release of non-contaminated materials, debris, and equipment from a site contaminated with hazardous constituents is accomplished by demonstrating that the materials or wastes do not exhibit any of the characteristics of hazardous waste as identified in Subpart C of 6 CCR 1007-3 SS261. Additionally, the material must not be qualified as a listed waste as identified in Subpart D, or be excluded under provisions in 6 CCR 1007-3 SS261.4, *Exclusions*. Non-contaminated recyclable materials, such as scrap metal, will be placed in approved waste crates and later segregated into bins supplied by Property Utilization and Disposal (PU&D). Additional items will be placed onto pallets for shipment to PU&D. All remaining non-regulated, standard industrial-type waste generated from decommissioning activities will be disposed at an off-site landfill.

3.4.2 ~~Regulated~~ Waste

Process knowledge and relative operating history will be used to manage contaminated areas apart from unaffected areas. Contaminated material will be segregated, categorized, and packaged according to the specifications for disposal in permitted hazardous waste, LLW, or LLM facilities. Waste characterization data and packaging requirements for LLW will meet the procedures and policies for managing LLW as outlined in the RFETS Low-Level Waste Management Plan. (Low Level Waste Management Plan 44-RWP /EWQA - 0014, Rev. 1, 1996). Waste Operations will designate temporary storage locations for LLW, LLM, or hazardous waste, as conditions warrant.

4.0 ENVIRONMENTAL IMPACTS

The National Environmental Policy Act (NEPA) requires that actions conducted at the RFETS consider potential impacts to the environment. While no separate NEPA documentation is required for this effort, RFCA requires DOE to consider environmental impacts of the proposed action and of alternatives as a part of this document.

4.1 Proposed Action and Alternatives

4.1.1 Proposed Action

The proposed action is the Decommissioning and Demolition (D&D) of Building 123, including site remediation. D&D activities and site remediation are to follow a project-specific plan approved by the DOE and CDPHE. Activities would generally consist of site and facility characterization, decontamination, dismantlement, waste disposition and remediation of any contaminated soil and pipelines. All hazardous, LLW and LLM generated by D&D activities would be transported to an

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appropriate offsite facility for disposal. The objective of the proposed action is to obtain from DOE and CDPHE a timely release of the site for unrestricted use.

D&D includes removing or decontaminating equipment, decontaminating building surfaces and structural members; surveying the facility for residual contamination; and characterizing, packing, and shipping the resulting wastes. Removal of residual contamination would be initiated with the simplest and least aggressive method, such as decontamination using vacuums and damp cloths. Increasingly aggressive techniques would be employed, as appropriate, to remove the remaining fixed contamination, including hand washing or scrubbing; dry abrasive blasting and scabbling; or scarification. ~~New, innovative technologies~~ would be considered if sufficiently developed and cost-effective.

Subsequent D&D activities would include application of fixatives to all contaminated surfaces to prevent ~~the dispersion of contaminants during dismantlement~~. A survey would be performed to assure that all contaminants are fixed in place. The entire facility would be dismantled (with the exception of the building slab) and debris would be shipped to appropriate offsite facilities for disposal.

Final D&D activities would include remediation of soil and underground piping beneath and surrounding the building slab. Remediation may include removal of contaminated soil, associated pipelines, and/or the ~~concrete slab. Following proper remediation, the site would be regraded and~~ seeded in an attempt to return the site to a natural state.

4.1.2 Alternative Actions

4.1.2.1 ~~Alternative 1 to Proposed~~ Action: No Action, Maintain Safe Shutdown Decontamination

The alternative would involve maintenance of Building 123 in a safe-shutdown status, including a commitment to long-term surveillance and upkeep, while performing a continued environmental monitoring program to ensure that contamination has not escaped to the environment. Regularly scheduled inspection and maintenance of health, safety, and radiation protection equipment would be performed and documented.

4.1.2.2 Alternative 2 to Proposed Action: Partial Facility Dismantlement with Minimal Decontamination

The alternative would involve minimal decontamination and demolition activities. All building equipment would be removed, including all hoods and overhead process waste lines. The remaining ~~structure and surrounding area~~ would be treated as described in Section 4.1.2.1.

Evaluation of Alternatives

Both alternatives were rejected as operative actions, since such efforts would prevent proper cleanup of RFETS as defined under the Life Cycle Baseline. Eventual degradation of the building structure would pose a threat to the public through chemical and physical hazards. Potential also exists for groundwater ~~contamination through release~~ of contaminants to the soil as the integrity of piping systems and sumps will eventually be compromised.

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4.2 Potential Environmental Consequences of the Proposed Action

Potential environmental effects associated with the D&D of Building 123 are described in the following sections:

4.2.1 Geology and Soils

Decommissioning activities will disturb less than one (1) acre of land, most of which has previously been disturbed. Activities such as excavating could cause localized soil slumping to occur. Soil recontouring will be conducted after buildings are removed. Potential effects will be short-term increases in soil erosion and siltation, and small, temporary losses in soil productivity. Revegetation will be initiated to mitigate any impacts caused by soil disturbance activities. Topsoil of sufficient quality will be used to support revegetation.

4.2.2 Air Quality

No continuing long-term air quality impacts are expected after the project has been completed. Short-term impacts will be mitigated by dust suppression techniques and excavation controls. Air Quality impacts are further discussed in Section 5.1.1, and air monitoring criteria is defined in Section 3.2.2. Dust generated during the decommissioning effort will be managed with engineering controls.

4.2.3 Water Quality

Major surface water and groundwater quality impacts are not anticipated. The excavation area(s) will include run-on and run-off controls to prevent stormwater from contacting the wastes, and are not expected to intersect the groundwater table. Removal of buildings and excavation of paved areas will result in a net decrease in storm water runoff from the Building 123 area and a corresponding increase in the amount of precipitation that percolates into the soil. Most of the local precipitation either evaporates on the ground surface or is taken up by vegetation. Surface water monitoring has been established at the Central Avenue ditch by RFETS Water Quality under a monitoring Interim Remedial Action (IRA).

4.2.4 Fauna and Flora

Building 123 is not located near any wetlands or habitat suitable for the threatened and endangered species and migratory birds. An attempt will be made to preserve the condition of four large trees along the north end of the site.

4.2.5 Human Health

Human health impacts are addressed through requirements for worker protection and requirements

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to control the dispersion of contamination to air, water, and soil. Exposures to workers and the public will be controlled and monitored in accordance with standards defined in Section 5.0.

4.2.6 Noise

Decommissioning activities will involve common industrial activities (e.g., wiping, disassembly, sawing and crushing) with a variety of associated noise levels. Many of the activities will be conducted within the building; thus, elevated noise levels will be muffled by the building structure. Other, ~~less common techniques such as scabbling~~, blasting and demolition by pneumatic hammer, wrecking ball, or other devices are expected to generate higher than ambient noise levels. Workers involved ~~in such activities will use~~ appropriate hearing protection devices. Outdoor activities will be conducted in a safe manner in which noise will not affect non-involved workers and the public.

4.2.7 Historical Resources

The programmatic agreement between the DOE Rocky Flats Field Office, the Colorado SHPO, and the Advisory Council on Historic Preservation has been approved. Arrangements are being made to take landscape photographs of Building 123 which has been designated as a Potentially Historic Structure. The buildings will be demolished after the photographs have been taken.

5.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

RFETS ~~decommissioning actions performed under a PAM~~ must attain, to the maximum ~~extent~~ practicable, Federal and State applicable or relevant and appropriate requirements (ARARs). ARARs associated with this document are a subset of the Federal and State requirements, which pertain directly to actions or conditions in the environment and are either applicable or relevant to particular decommissioing activities.

Applicable requirements are cleanup standards; standards of control and other substantive environmental protection requirements; criteria; or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location ~~or other circumstance at a CERCLA~~ site.

Relevant and appropriate requirements are cleanup standards; standards of control and other substantive environmental protection requirements; criteria; or limitations promulgated under Federal ~~or~~ State ~~law, that while not~~ applicable to a pollutant, contaminant, remedial action, location or other circumstance at a CERCLA site, can sufficiently address problems or situations similar to those encountered at a CERCLA site.

ARARs associated with D&D projects include:

chemical ~~specific- quantitative health- or~~ risk-based restrictions upon exposure to types of hazardous substances [e.g., drinking water standards as defined by Maximum Contaminant Levels

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(MCLs)];

action specific- technology-based requirements for actions taken upon hazardous substances (incinerator standards that require particular destruction and removal efficiency); and

location specific- restrictions upon activities in certain special locations (standards that prohibit certain types of facilities to operate in designated flood plain areas).

Table 5-1 is a general list of ARARs that are applicable for this project. A specific list is included as Attachment A.

5.1 Chemical-Specific Requirements and Considerations

The project will encounter conditions regulated by the following chemical specific restrictions. The restrictions will be incorporated into the project planning effort and will be assured by following site procedures or by direct inclusion in the IWCP.

5.1.1 Airborne

The following Colorado Air Quality Control Commission (CAQCC) Regulations serve as applicable requirements:

- Reg. 8, Part A, (40 CFR Part 61) Subpart H regulates radionuclide emissions other than radon from DOE facilities and will apply to Building 123 if radiological contamination is discovered during characterization activities. 40 CFR 61.92 requires that no member of the public receive more than 10 mrem per year above background from airborne sources of radiation. Compliance with 40 CFR 61.92 is performed on a sitewide basis as a response to all RFETS sources, in which stack monitoring is required for all release points contributing greater than 0.1 mrem/year. Based upon preliminary estimates, monitoring will not be required. A formal analysis will be prepared.
- Reg. 8, Part B defines emission standards for asbestos
- Reg. 8, Part C establishes an emission standard for lead in ambient air. The regulation states that no person shall cause or permit emissions of lead into the ambient air which would result in an ambient lead concentration exceeding 1.5 $\mu g/m^3$ averaged over a one-month period. The regulation will apply to any decommissioning activities with the potential to emit lead into the ambient air.

Emission Controls for Particles (5 CCR 1001-1) and *Emissions of Volatile Organic Compounds* (5 CCR 1001-9) may be applicable to soil excavation activities. Fugitive dust emissions controls are appropriate and relevant for the demolition. A list of hazardous air pollutant ARARs associated with this project is included in Attachment A.

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Table 5-1 General List of Applicable or Relevant and Appropriate Requirements for Decommissioning and Demolition Activities at RFETS

Requirement	Applicable	Relevant and Appropriate	TBC
DOE Order 5400.5, *Radiation Protection of the Public and Environment*	No	No	Yes
40 CFR 191, *Radioactive Dose Standards* (Spent Nuclear Fuel; High Level and Transuranic Radioactive Wastes)	NA	NA	NA
DOE Order 5820.2A, *Radioactive Waste Management*	No	No	Yes
6 CCR 1007-14, *Colorado Low Level Waste*	Yes	No	No
Colorado Air Quality Control Emission Standards for Asbestos Regulation 8, *Control of Hazardous Air Pollutants*	Yes	No	No
5 CCR 1001-14, *Ambient Air Quality Standards*	Yes	No	No
5 CCR 1001, *Colorado Air Pollution Regulations*	Yes	No	No
40 CFR 61, Subpart H, *National Emission Standards for Hazardous Air Pollutants*	Yes	No	No
5 CCR 1002-8, *Colorado Basic Standards and Methodologies for Surface Water*	NA	NA	NA
5 CCR 1002-8, *Colorado Basic Standards for Groundwater*	Yes	No	No
5 CCR 1003-1, 40 CFR 141, *Safe Drinking Water Act, Colorado Primary Drinking Water Regulations*	NA	NA	NA
40 CFR 141, *Maximum Contaminant Level Goals*	NA	NA	NA
Solid Waste Disposal Act, Colorado Hazardous Waste Act	Yes	No	No
Toxic Substance Control Act 15 USC 2601 *et seq.*			
761.40/761.45, *Labeling*	Yes	No	No
761.65, *Except for Time Limit*	Yes	No	No
761.66, *Time Limit*	NA	NA	NA
761.79, *Decontamination*	Yes	No	No
761.125, *PCB Spill Cleanup*	Yes	No	No

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5.2 Action-Specific Requirements and Considerations

The technology ~~based standards and requirements are utilized~~ when ever applicable or relevant and appropriate, to that specific action, to eliminate as many problem areas as possible. The project will encounter conditions regulated by the chemical specific restrictions identified in section 5.2.1 and Attachment A. The restrictions will be incorporated in this project planning effort and will be assured by following applicable RFETS procedures.

5.2.1 ~~Resource Conservation and Recovery~~ Act (RCRA)

Requirements ~~governing the~~ identification ~~and~~ characterization of hazardous wastes are defined in RCRA and are applicable to the requirements in the Colorado Hazardous Waste Act (CHWA)(6 CCR ~~1007-3, 261~~). ~~The implementation of generator~~ standards (6 CCR 1007-3 262) will be completed utilizing the WSRIC program and Waste Management Procedures. A list of specific RCRA ARARs associated with this project is included in Attachment A.

5.2.2 Toxic Substance Control Act (TSCA)

The Toxic Substance Control Act defines criteria to guide management and disposal of PCBs. Fluorescent light ballasts are the only potential source of PCBs identified in Building 123. Light ballasts marked "No PCBs" or "PCB Free" will be managed as non-hazardous solid waste and disposed at a sanitary landfill. Ballasts marked "PCBs" or not marked and not leaking will be packaged for disposal at an TSCA-permitted facility. Leaking PCB light ballasts and unmarked light ballasts ~~will be managed as fully regulated PCB~~ Articles. A list of specific TSCA ARARs associated with this project is included in Attachment A.

5.2.3 Colorado Low Level Waste Program

The State of Colorado Low Level Waste Program (6 CCR 1007-14) is incorporated in Waste Management Operation procedures (1100-1104).

5.3 Location-Specific requirements and Considerations

No location specific requirements are associated with the scope of work.

5.4 To-Be-Considered (TBC)

TBCs are used in determining the necessary level of cleanup for the protection of human health and the environment. The March 8, 1990 preamble to the final National Contingency Plan (NCP) rule (55 FR 8746) indicates that the use of TBCs is discretionary rather than mandatory; however, incorporation of TBCs is recommended and identified in this document.

6.0 IMPLEMENTATION SCHEDULE

The Level 1 ~~schedule for this project is included~~ as Attachment B. To meet requirements of the PAM process, the project will be completed in less than six months from commencement of contractor mobilization.

7.0 REFERENCES

DOE 1992a, ~~*Final Phase I RFI/RI Work Plan for*~~ *Operable Unit 9, Original Process Waste Lines*, March.

DOE 1992b, *Final Phase I RFI/RI Work Plan for Operable Unit 13, 100 Area*, October.

DOE 1992c, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO.

DOE 1994, *Final Phase I RFI/RI Work Plan for Operable Unit 9, Technical Memorandum No.1, Volume IIA-Pipelines*, November.

DOE 1996a, *Final Rocky Flats Cleanup Agreement*, Rocky Flats Environmental Technology Site, July.

DOE 1996b, *RFETS Ten Year Plan.*

DOE 1997, *Part IX Personnel Training of the Rocky Flats Environmental Technology Site RCRA Permit .*

EPA 1994, *Guidance for the Data Quality Objective Process*, EPA, QA/G-4.

NRC 1997, *NUREG/CR-5849, Manual for Conducting Radiological Surveys in Support of License Termination*, Draft.

ATTACHMENT A
RCRA APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

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ATTACHMENT A
RCRA APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Chemical Specific Requirements and Considerations

Regulation 8 Control of Hazardous Air Pollutants

Citation	Applicable	Relevant and Appropriate	TBC
Regulation 8 Control of Hazardous Air Pollutants (Sections involving with School requirements and State Buildings are not applicable.)	NA	NA	NA
Regulation No. 8 Part B, Part II, *Certification and Training*	No	No	Yes
General Requirements to Obtain a General Abatement Certificate	NA, administrative	NA	NA
Section II, *Initial Training*	No, worker safety issues are covered under OSHA and are not ARARs.	No	Yes
Section III, *Project Requirements*			
III B1, *Notification*	NA, administrative	NA	NA
C, *General Requirements Permits*	NA, administrative	NA	NA
C. 2, *Asbestos Abatement Work Practices*	NA, addressed through health and safety issues with exceptions	NA	NA
C.7.6, *Maximum Allowable Asbestos Levels*	Yes	No	No
C.8.2.b., d, f, *Handling Waste Material*	Yes	No	No
C.4, *Alternative Procedures and Variances*	NA, administrative	NA	NA
III, A(i) *Notice of Asbestos Removal*	NA, administrative	NA	NA
III *Asbestos Spill Response* (except as noted below):	No	No	Yes
III B.1, *Notices-Release triggers*	NA, administrative	NA	NA
III C., *Permit-Release triggers*	No	No	No
29 CFR 1910.134	No	No	No

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Citation	Applicable	Relevant and Appropriate	TBC
29 CFR 1926.58, *Asbestos Construction Standard*	No	No	No
EPA Worker Protection Rule	No	No	No

Action Specific Requirements and Considerations

RCRA

Citation	Applicable	Relevant and Appropriate	TBC
40 CFR 261, *Identification and Listing of Hazardous Waste*	Yes	No	No
40 CFR 262, *Standards Applicable to Generators of Hazardous Waste*			
262.11, *Hazardous Waste Determinations*	Yes	No	No
262.12, *EPA ID Number*	No	No	No
262 Subpart B, *Manifest*	No	No	No
262 Subpart C, *Pre-Transportation Requirement*	Yes	No	No
262.34, *Accumulation Time* (with the following exceptions):	Yes	No	No
90-Day Storage Time Limit	No	No	No
Container Labeling	No	No	Yes
Container Dating	No	No	No
55 Gallon Limit for SAA	No	No	No
262.40 Subpart D, *Recordkeeping and Reporting*	No	No	No
262 Subpart E, *Exports of Hazardous Waste*	NA	NA	NA

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Action Specific Requirements and Considerations

RCRA (cont)

Citation	Applicable	Relevant and Appropriate	TBC
262 Subpart F, *Imports of Hazardous Waste*	NA	NA	NA
262 Subpart H, *Transfrontier Shipments*	NA	NA	NA
40 CFR 263, *Standards Applicable to Transporters of Hazardous Wastes*			
263.11, *EPA Identification Number* (offsite shipments only)	Yes	No	No
263.12, *Transfer Facility* (offsite shipments only)	Yes	No	No
263 Subpart B, *Manifest System* (offsite shipment only)	Yes	No	No
263 Subpart C, *Hazardous Waste Discharges* (off-site shipments only)	Yes	No	No
40 CFR 264 Subpart S, *Corrective Action for Solid Waste Management Units*	Yes	No	No
40 CFR 265, *Interim Status Standards for Owners and Operators of Hazardous Waste TSDFs*			
265 Subpart A, *General*	No	No	No
265 Subpart B, *General Facility Standards*			
265.11, *Identification Number*	No	No	No
265.12, *Required Notices*	No	No	No
265.13, *General Waste Analysis*	NA	NA	NA
265.14, *Security*	NA	NA	NA
265.15, *General Inspection Requirements*	NA	NA	NA

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Action Specific Requirements and Considerations

RCRA (cont)

Citation	Applicable	Relevant and Appropriate	TBC
265.16, *Personnel Training*	No	No	Yes
265.17, *General Requirements for Ignitable, Reactive, or Incompatible Wastes*	No	No	Yes
265.18, *Location Standards*	NA	NA	NA
265.19, *Construction Quality Assurance Program*	NA	NA	NA
265 Subpart C, *Preparedness and Prevention*			
265.31, *Maintenance and Operation of Facility*	Yes	No	No
265.32, *Required Equipment*	Yes	No	No
265.33, *Testing and Maintenance of Equipment*	Yes	No	No
265.34, *Access to communications or alarms*	Yes	No	No
265.35, *Required Aisle Space*	Yes	No	No
265.37, *Arrangements with local authorities* (a) (1)-(4)	Yes	No	No
(b)	No	No	No
265 Subpart D, *Contingency Plan and Emergency Procedures*	Yes	No	No
265 Subpart E, *Manifest System* (offsite shipments of hazardous waste)	Yes	No	No
265 Subpart F, *Ground-water Monitoring*	NA	NA	NA
265 Subpart G, *Closure and Post-Closure*	NA	NA	NA

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Action Specific Requirements and Considerations

RCRA (cont)

Citation	Applicable	Relevant and Appropriate	TBC
265 Subpart I, *Use and Management of Containers* NOTE: Subpart S of 264 may replace this section of ~~requirements~~.	Yes	No	No
265 Subpart J, *Tanks*, Part of an existing RCRA unit (tanks, sumps, piping and other ancillary equipment will be closed using a separate Closure Plan in accordance with 265 Subpart G. This unit will be closed under the 123 PAM.	NA	NA	NA
265 ~~Subpart K~~, *Surface Impoundments*	NA	NA	NA
265 Subpart L, *Waste Piles*	NA	NA	NA
265 Subpart N, *Landfills*	NA	NA	NA
265 Subpart O, *Incinerators*	NA	NA	NA
265 Subpart P, *Thermal Treatment*	NA	NA	NA
265 Subpart Q, *Chemical, Physical and Biological Treatment*	NA	NA	NA
265 Subpart R, *Underground Injection*	NA	NA	NA
265 Subpart W, *Drip Pads*	NA	NA	NA
265 Subpart AA, *Air Emission Standards for Process Vents*	NA	NA	NA
265 Subpart BB, *Air Emission for Equipment Leaks*	NA	NA	NA
265 Subpart CC, *Air Emission Standards for Tanks, Surface Impoundments and Containers*	Deferred	No	No
265 Subpart DD, *Containment Buildings*	NA	NA	NA

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Action Specific Requirements and Considerations

RCRA (cont)

Citation	Applicable	Relevant and Appropriate	TBC
40 CFR 266 Subpart C, *Recyclable Materials Used in a Manner Constituting Disposal*	NA	NA	NA
266 Subpart F, *Recyclable Materials Utilized for Precious Metal Recovery*	NA	NA	NA
266 Subpart G, *Spent Lead Acid Batteries*	Yes	No	No
266 Subpart H, *Hazardous Waste Burned in Boilers and Industrial Furnaces*	NA	NA	NA
40 CFR 268, *Land Disposal Restrictions* (all sections regarding off-site shipment of wastes are applicable except for the following):	Yes	No	No
268.50, *One Year Storage Prohibition*	No	No	No
268.6, *Petitions to Allow Land Disposal of a Prohibited Waste*	No	No	No
268.44, *Variance from a Treatment Standard*	No	No	No
268.7(a)(4), *Waste Analysis Plan for Onsite Treatment*	No	No	No
268.9(a)(4), *One-Time Notifications of Onsite Treatment and Disposal of Characteristic Waste*	No	No	No
268.7(a)(5)(6) *One-Time Notice* (Onsite waste only)	No	No	No
40 CFR 270, *Hazardous Waste Permit*	NA	NA	NA
40 CFR 271, *State Authorization*	NA	NA	NA

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Action Specific Requirements and Considerations

RCRA (cont)

Citation	Applicable	Relevant and Appropriate	TBC
40 CFR 273, *Universal Waste Management* (Batteries, pesticides and thermostats only)	Yes	No	No
40 CFR 279, *Used Oil Management Standards*			
279 Subpart C, *Used Oil Generators*	Yes	No	No
279 Subpart D-G	NA	NA	NA
279 Subpart H, *Standards for Used Oil Marketers*	Yes	No	No
279 Subpart I, *Dust Suppressant*	NA	NA	NA
40 CFR 280, *Underground Storage Tanks*	NA	NA	NA

TSCA

Citation	TSCA Requirement	Appli-cable	Relevant and Appropriate	TBC
Ballast Marked "No PCB" or "PCB Free" (Both leaking and non-leaking)	None	NA	NA	NA
Non-Leaking Ballast Marked "Contains PCBs"	Disposal in a TSCA Incinerator (Small capacitor exclusion)	No	No	Yes
Non-Leaking, Unmarked Ballast	Disposal in a TSCA Incinerator (Guidance from Region VIII)	No	No	Yes
Leaking Ballast Marked "Contains PCBs"	PCB Article 761 et. seq.	Yes	No	No
Leaking, Unmarked Ballast	PCB article fully TSCA regulated including any material that comes into direct contact with the leak	Yes	No	No

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ATTACHMENT B
LEVEL 1 SCHEDULE FOR THE DECONTAMINATION AND DECOMMISSIONING OF BUILDING 123

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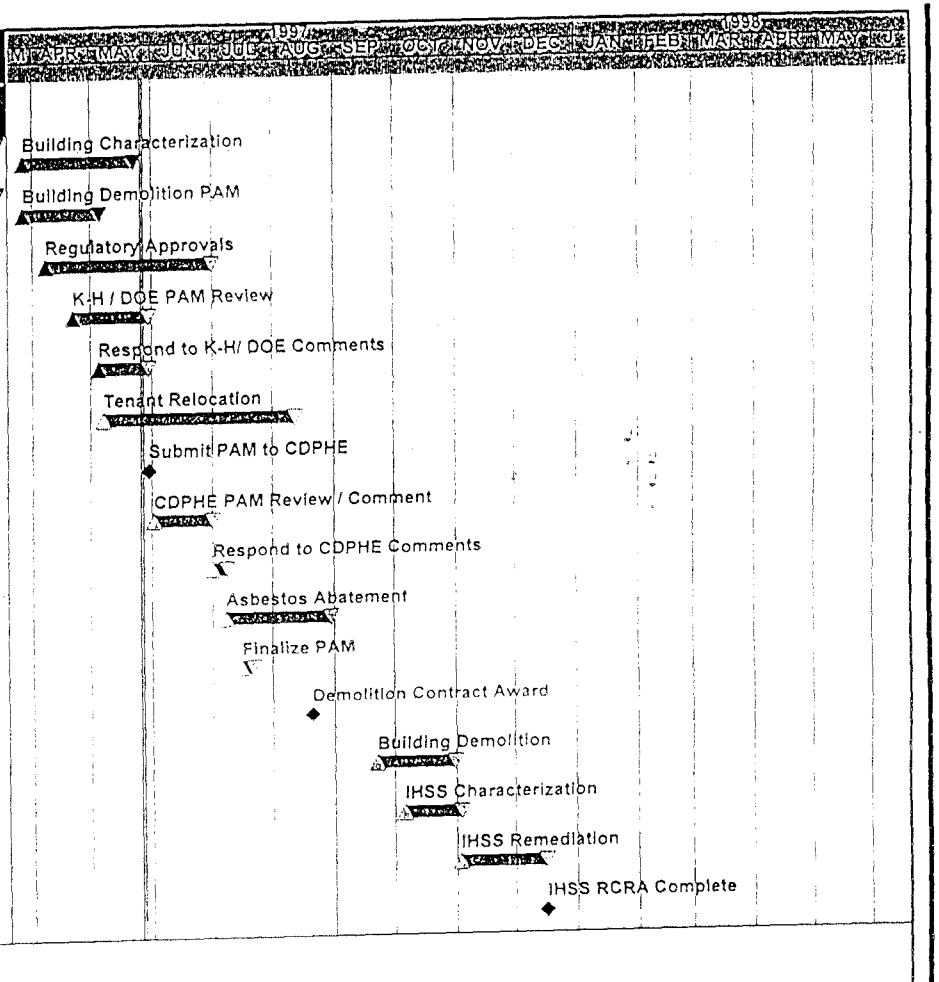
Activity Description	Orig Dur	Early Start	Early Finish	Actual Start	Actual Finish
Building 123 D&D					
Life Cycle Activities					
Building Characterization	37*	27MAR97	22MAY97	27MAR97	22MAY97
Building Demolition PAM	26*	27MAR97	05MAY97	27MAR97	05MAY97
Regulatory Approvals	53*	08APR97A	30JUN97	08APR97	
K-H / DOE PAM Review	25	22APR97A	29MAY97	22APR97	
Respond to K-H/ DOE Comments	4	05MAY97A	29MAY97	05MAY97	
Tenant Relocation	60*	07MAY97	11AUG97		
Submit PAM to CDPHE	0		29MAY97*		
CDPHE PAM Review / Comment	19	02JUN97*	30JUN97		
Respond to CDPHE Comments	6	01JUL97*	08JUL97		
Asbestos Abatement	34	08JUL97	29AUG97		
Finalize PAM	4	16JUL97*	21JUL97		
Demolition Contract Award	0	20AUG97			
Building Demolition	27	22SEP97	30OCT97		
IHSS Characterization	19	06OCT97*	03NOV97		
IHSS Remediation	27*	03NOV97	15DEC97		
IHSS RCRA Complete	0		15DEC97		



Level 1 Schedule for the Decommissioning and Demolition of Building 123

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